

CLAIMS

1. A titanium alloy part having a compressive stress of
approximately 270 MPa or more within a depth of about 100 μm
5 from a surface thereof.

2. The titanium alloy part of claim 1, further
comprising a surface region extending from the surface to a
depth of about 100 μm , and an internal region disposed
10 internally relative to the surface region, wherein the
surface region includes a modified layer containing more a
phase than does the internal region, the modified layer
accounting for a proportion of about 10 vol% or less of the
surface region.

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3. The titanium alloy part of claim 1 or 2, wherein the
surface has a maximum surface roughness R_t of about 20 μm or
less.

20 4. The titanium alloy part of any of claims 1 to 3,

wherein the titanium alloy part contains about 50 vol% or more of β phase at room temperature.

5. The titanium alloy part of any of claims 1 to 4,
5 wherein the titanium alloy part is a spring.

6. The titanium alloy part of any of claims 1 to 4,
wherein the titanium alloy part is a suspension spring for a
vehicle.

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7. The titanium alloy part of any of claims 1 to 4,
wherein the titanium alloy part is one selected from the
group consisting of a valve spring for an engine, a
connecting rod for an engine, and a structural part for an
15 aircraft.

8. An engine comprising the titanium alloy part of any
of claims 1 to 4.

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9. A vehicle comprising the titanium alloy part of any

of claims 1 to 4.

10. A method for producing a titanium alloy part comprising:

5 step (A) of providing a shaped titanium alloy part;
 step (B) of subjecting the shaped titanium alloy part to
 a shot peening using a first shot medium; and
 step (C) of mechanically or physically removing at least
 a part of a modified layer created in a surface region of the
10 shaped titanium alloy part as a result of step (B).

11. The method for producing a titanium alloy part of
claim 10, wherein step (C) comprises shooting a second shot
medium against a surface of the shaped titanium alloy part,
15 the second shot medium having a higher hardness than that of
 the first shot medium.

12. The method for producing a titanium alloy part of
claim 11, wherein the second shot medium has a Vickers
20 hardness of about 1,000 or more.

13. The method for producing a titanium alloy part of
claim 11 or 12, wherein the second shot medium contains SiO₂.

5 14. The method for producing a titanium alloy part of
any of claims 10 to 13, wherein step (C) removes the shaped
titanium alloy part at a depth of about 20 μ m to about 40 μ
m from the surface.

10 15. The method for producing a titanium alloy part of
any of claims 10 to 14, wherein the shaped titanium alloy
part has a Vickers hardness of about 370 to about 470.

16. The method for producing a titanium alloy part of
15 any of claims 10 to 15, wherein step (A) comprises:

step (A1) of winding around a wire material of a
titanium alloy to obtain a shaped titanium alloy part having
a coil shape; and

step (A2) of subjecting the shaped titanium alloy part
20 to an aging treatment.

17. The method for producing a titanium alloy part of
any of claims 10 to 16, wherein step (B) comprises shooting
the first shot medium against the shaped titanium alloy part
5 via centrifugal force, compressed air, or hydraulic pressure.